

WHAT IS CLAIMED IS:

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1. An information storage apparatus for recording, reproducing and/or erasing information with respect to a recording medium, comprising:

servo error generation detecting means for  
10 detecting a generation of a servo error based on at least one of servo signals including a focus error signal and a tracking error signal which are derived from output signals of a light receiving element; and  
data recording resuming means for temporarily  
15 interrupting a data recording with respect to the recording medium, temporarily turning OFF a servo and then turning ON the servo again, to thereafter synchronize recording data to recorded data already recorded on the recording medium, and resume recording  
20 of the recording data continuing without a discontinuity to an end of the recorded data recorded immediately before the interruption of the data recording, when the servo error generation detecting means detects the generation of the servo error while recording data on  
25 the recording medium.

2. The information storage apparatus as claimed in claim 1, wherein the servo error generation detecting means includes means for detecting the generation of the servo error when a servo signal makes  
5 a transition from a signal level in a stable state of the servo signal to a state where the signal level is deviated by a predetermined threshold value.

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3. The information storage apparatus as claimed in claim 1, further comprising:

rate changing means for changing a recording rate  
15 so as not to generate the servo error when resuming the recording by the data recording resuming means.

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4. The information storage apparatus as claimed in claim 3, further comprising:

control means for resuming the recording of the recording data at a recording rate identical to a  
25 recording rate immediately before the recording is

interrupted if a number of times the servo error is  
detected by the servo error generation detecting means  
is less than a predetermined number, and changing the  
recording rate so as not to generate the servo error if  
5 the number of times the servo error is detected is  
greater than or equal to the predetermined number, when  
resuming the recording by the data recording resuming  
means.

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5. An information storage apparatus for  
recording, reproducing and/or erasing information with  
15 respect to a recording medium, comprising:

servo error generation detecting means for  
detecting a generation of a servo error based on at  
least one of servo signals including a focus error  
signal and a tracking error signal which are derived  
20 from output signals of a light receiving element; and

data recording resuming means for temporarily  
interrupting a data recording with respect to the  
recording medium, temporarily turning OFF only a  
tracking servo without turning OFF all servos and then  
25 turning ON the tracking servo again, to thereafter

synchronize recording data to recorded data already  
recorded on the recording medium, and resume recording  
of the recording data continuing without a discontinuity  
to an end of the recorded data recorded immediately  
5 before the interruption of the data recording, when the  
servo error generation detecting means detects the  
generation of the servo error while recording data on  
the recording medium.

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6. The information storage apparatus as  
claimed in claim 5, wherein the servo error generation  
15 detecting means includes means for detecting the  
generation of the servo error when a servo signal makes  
a transition from a signal level in a stable state of  
the servo signal to a state where the signal level is  
deviated by a predetermined threshold value.

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7. The information storage apparatus as  
25 claimed in claim 5, further comprising:

rate changing means for changing a recording rate so as not to generate the servo error when resuming the recording by the data recording resuming means.

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8. The information storage apparatus as claimed in claim 7, further comprising:

10 control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is interrupted if a number of times the servo error is detected by the servo error generation detecting means  
15 is less than a predetermined number, and changing the recording rate so as not to generate the servo error if the number of times the servo error is detected is greater than or equal to the predetermined number, when resuming the recording by the data recording resuming  
20 means.

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9. An information storage apparatus for



recording, reproducing and/or erasing information with respect to a recording medium, comprising:

ATIP signal detecting means for detecting an ATIP signal based on output signals from a light receiving  
5 element;

ATIP decoding and ATIP error detecting means for decoding the ATIP signal detected by the ATIP signal detecting means to reproduce information included in the ATIP signal and to detect an ATIP error;

10 ATIP error measuring means for measuring the ATIP error detected by the ATIP decoding and ATIP error detecting means to output an ATIP error rate; and

data recording resuming means for temporarily interrupting a data recording with respect to the  
15 recording medium, to synchronize recording data to recorded data already recorded on the recording medium, and resume recording of the recording data continuing without a discontinuity to an end of the recorded data recorded immediately before the interruption of the data  
20 recording, when the ATIP error measuring means detects an increase of the ATIP error rate while recording data on the recording medium.

10. The information storage apparatus as claimed in claim 9, further comprising:

rate changing means for changing a recording rate so as not to increase the ATIP error rate when resuming  
5 the recording by the data recording resuming means.

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10 11. The information storage apparatus as claimed in claim 10, further comprising:

control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is  
15 interrupted if the ATIP error rate output from the ATIP error measuring means increases and a number of times the increase of the ATIP error rate is detected by the servo error generation detecting means is less than a predetermined number, and changing the recording rate so  
20 as not to increase the ATIP error rate if the number of times the increase of the ATIP error rate is detected is greater than or equal to the predetermined number, when resuming the recording by the data recording resuming means.

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ATIP signal detecting means for detecting an ATIP  
5 signal based on output signals from a light receiving  
element;

ATIP error measuring means for measuring the ATIP error detected by the ATIP decoding and ATIP error detecting means to output an ATIP error rate; and

data recording resuming means for temporarily  
15 interrupting a data recording with respect to the  
recording medium, and changing a lens position related  
to the data recording by carrying out a carriage moving  
operation, to thereafter synchronize recording data to  
recorded data already recorded on the recording medium,  
20 and resume recording of the recording data continuing  
without a discontinuity to an end of the recorded data  
recorded immediately before the interruption of the data  
recording, when the ATIP error measuring means detects  
an increase of the ATIP error rate while recording data  
25 on the recording medium.



13. The information storage apparatus as claimed in claim 12, further comprising:

rate changing means for changing a recording rate so as not to increase the ATIP error rate when resuming the recording by the data recording resuming means.

10 14. The information storage apparatus as claimed in claim 13, further comprising:

control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is interrupted if the ATIP error rate output from the ATIP error measuring means increases and a number of times the increase of the ATIP error rate is detected by the servo error generation detecting means is less than a predetermined number, and changing the recording rate so as not to increase the ATIP error rate if the number of times the increase of the ATIP error rate is detected is greater than or equal to the predetermined number, when resuming the recording by the data recording resuming means.

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15. An information storage apparatus for recording, reproducing and/or erasing information with respect to a recording medium, comprising:

shock and vibration detecting means for detecting  
5 shock, vibration or the like applied with respect to the information storage apparatus; and

data recording resuming means for temporarily  
interrupting a data recording with respect to the  
recording medium when the shock and vibration detecting  
10 means detects the shock, vibration or the like while recording data on the recording medium, and for synchronizing recording data to recorded data already recorded on the recording medium, and resuming recording  
of the recording data continuing without a discontinuity  
15 to an end of the recorded data recorded immediately before the interruption of the data recording when the shock and vibration detecting means no longer detects the shock, vibration or the like.

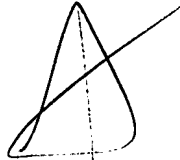
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16. The information storage apparatus as claimed in claim 15, further comprising:

25 rate changing means for changing a recording rate

so as not to generate the shock, vibration or the like when resuming the recording by the data recording resuming means.

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17. The information storage apparatus as claimed in claim 16, further comprising:

10 control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is interrupted if the number of times the shock, vibration or the like is detected by the shock and vibration  
15 detecting means is less than a predetermined number, and for changing the recording rate so as not to generate the shock, vibration or the like if the number of times the shock, vibration or the like is detected is greater than or equal to the predetermined number, when resuming  
20 the recording by the data recording resuming means.

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18. The information storage apparatus as

claimed in claim 15, wherein the shock and vibration detecting means includes means for detecting the shock, vibration or the like based on a tracking error signal.

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19. The information storage apparatus as claimed in claim 15, wherein the shock and vibration detecting means includes means for detecting the shock, vibration or the like based on a focus error signal.

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20. The information storage apparatus as claimed in claim 15, wherein the shock and vibration detecting means includes means for detecting the shock, vibration or the like based on a reflectivity detection signal.

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21. An information storage apparatus for

recording, reproducing and/or erasing information with respect to a recording medium, comprising:

temperature measuring means for measuring a temperature within the information storage apparatus;

5 and

data recording resuming means for temporarily interrupting a data recording with respect to the recording medium when the temperature measuring means measures a high temperature which is greater than or  
10 equal to a predetermined temperature while recording data on the recording medium, and synchronizing recording data to recorded data already recorded on the recording medium and resuming recording of the recording data continuing without a discontinuity to an end of the  
15 recorded data recorded immediately before the interruption of the data recording when the temperature measured by the temperature measuring means becomes less than the predetermined temperature.

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22. The information storage apparatus as claimed in claim 21, wherein the data recording resuming  
25 means includes means for detecting a high temperature

state when a difference between the temperature measured by the temperature measuring means during the data recording and an initial temperature measured before a start of the data recording exceeds a predetermined  
5 threshold value.

10 23. The information storage apparatus as claimed in claim 21, further comprising:  
rate changing means for changing a recording rate so as not to generate a high temperature state when resuming the recording by the data recording resuming  
15 means.

20 24. The information storage apparatus as claimed in claim 23, further comprising:  
control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is  
25 interrupted if a number of times the high temperature

is less than  
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Figure 1. The structure of the proposed model.